Project Closeout Report

Presented to the IT Committee March 26, 2008

Project Name: Secretary of State Knowledge Base (SOSKB)

Agency: Office of the Secretary of State

Business Unit/Program Area: Central Indexing System (CIS)

Project Sponsor: Al Jaeger, Secretary of State

Project Manager: Justin Data, Project Manager III, ITD

	Measurements	
Project Objectives	Met/ Not Met	Description
Improve and create additional online services to users of these systems	Not Met	The product was not implemented.
Reduction in labor	Not Met	The product was not implemented.

Schedule Objectives			
Met/ Not Met	Scheduled Completion Date	Actual Completion Date	Variance
Not Met	April 3, 2008 (last baseline set)	NA	Project was shut down, so did not complete.

Budget Objectives			
Met/ Not Met	Baseline Budget	Actual Expenditures	Variance
Not Met	$652,126 (original baseline) $880,598 (final baseline)	$770,105.30	-15% (against original baseline) 13% (against final baseline)

Major Scope Changes
▪ Scope changes (estimated figures): o Change imaging engine from Pegasus to Atlasoft ($4,745 cost, but saved $20,000+ in licensing) o Migrate from Active Reports to Crystal Reports ($21,505) o Adding UCC11 Search Functionality enhancement over base system ($15,300) o Multiple amendment filing enhancement over base system ($2,210) o Extract the county filing system as an online system ($90,100) o Updates to public web system ($10,406) o Total: $144,266 ▪ Cost increases due to technical problems (estimated figures) o Architecture, security and configuration upgrades ($35,770) o Changes to closeout reports ($3,400) o VB to.Net conversion problems ($42,500) o Termination fee fix ($630) o Debugging configuration changed by North Carolina during development ($1,656) o Database ($250) o Total: $84,206

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Lessons Learned

Note: Items in quotes are taken directly from post-implementation surveys.

- Perform a formal feasibility study first before making a go/no-go decision on a product implementation such as this.
  - "ITD should have been given more time to review the product before we decided to go down that path. The legislature needs to consider giving research money to agencies so that a more methodical approach can be given to the procurement or building of technology solutions."
  - Ultimately there are many costs involved in utilizing "free" software, especially on a large scale project such as this. Only a thorough, written study can reveal these costs, or reveal any fundamental flaws in the free technology.
  - Even with a full-blown study, however, you can never be certain as to how well the initial code base will function, how well it was written, and how well it may stand up to upgrade work, without at least performing some work on the system: "The initial review of the programming selected appeared to be compatible with the need of our agency, however, under testing it was less usable than the current programming in use."
  - Additionally, having done a study such as this would have provided more accurate budgetary details to the agency. The estimates we worked off of were underestimated. Without a good estimate and a clearly defined scope of work it is difficult to negotiate change to the system – or even know what a change is and what a change is not.
  - "A formal feasibility study should have been performed during the initiation of the project. Yes, this would have cost money, but I believe that if a true cost-benefit report and feasibility study was performed comparing the strengths/weaknesses/opportunities and threats of the free software vs. one or two other build or buy options, then the path taken may have been very different."
  - "ITD needed to do more internal planning before starting work. This project was unique, therefore more pre-planning should have been done."
  - "Get the architect involved up-front. Don't rely on a software analyst to make architecture decisions."

- Even if you are getting a fully developed system to convert, you must still create fully elaborated requirements first before embarking on the upgrade or install
  - " … the implementation path decided upon was that as the [initial North Carolina] product was written already then the existing app would serve as the functional base and then be added on or changed per the business documentation that was provided by the SOS staff to ITD. What occurred is that the NC code base was difficult to determine the granular business rule workings, and neither the details in the business documentation nor the estimate were decomposed enough to provide all the details. Additionally, it was assumed up front that the dev team would be able to roll out pieces of code from time to time for review [by the business], but the way in which the [original North Carolina] base code was so poorly constructed prohibited anything like that from being feasible. The lesson here is that even if you have an existing app that will be revised, that you should always fully elaborate on the requirements."
  - "[the resulting scope of the project was] beyond what was originally proposed because of lack of system design [from North Carolina], detailed requirements list and bad assumptions about the workability of the code received from North Carolina. Would strongly recommend that future projects of this type require detailed system design and involvement of Architects at initial stages."
  - "We need to make sure that the developers understand our needs [the customer's] before they develop the application. Seeing what they have developed before it is complete would also help."

- Although similar agencies in separate states may work under the same premise, the subtle differences in their separate laws still make their operations – to an extent – distinct and unique.
  - "There were more differences between our States than were accounted for."
  - "[the North Carolina application] was lacking many of the [technical] standards our State [North Dakota] upholds"

- Just because a system works for someone else, doesn't necessarily mean it can work for you.

  - The source code from North Carolina was shared with 12 other states via a consortium agreement that leveraged the services of one particular vendor to install and maintain it. North Dakota, however, entered into a one-on-one direct agreement with North Carolina Secretary of State to develop SOSKB for the mutual benefit of the respective offices.
    - As part of this agreement, NC was to provide ND with an upgraded version of code over what the other states were using. This was a pure technological upgrade from the "VB6" platform to the ".Net" platform. This was done because VB6 is being phased out by its creator, Microsoft, and .Net is the "current" technology. One of the biggest "surprises" in this regard is that the code we received, which had been converted using a Microsoft conversion tool, was full of errors. The conversion tool simply did not work as expected and this caused extra work to try to manually debug the system before any enhancement work had even begun. The effects of this faulty code base continued to reverberate throughout the project.

- If you are running into issues that continually don't allow for alternatives, immediately consider the validity of continuing the project. If it is then identified that the project isn't going to work, then it needs to be stopped right away.
  - "It would have been nice if the challenges had been identified sooner. However, the good news is that the plug could be pulled before all the available funds were spent"
  - Ironically, being dedicated to a cause – in this case, getting this system to function – may have contributed to not terminating the project sooner. As such, it wasn't until all options toward making it work were exhausted that conversations surrounding closing the project down began.
    - "I think all of the staff worked together well. People were committed toward making this work."

- Resource-related lessons
  - "ITD resources had many conflicts in their allocations of time to the project. As PM I spent a lot of time early in the project seeking out additional resources in vain. Additionally, no in-house development resource except for one was truly dedicated time-wise to the project."
  - "Finding contract help was also challenging. Finding any contract help at all was difficult, and four developers who we brought in on contract were terminated for poor performance. These resources were also at a much higher rate than ITD staff ($89/hr. vs. ITD's $63/hr.)"
  - "From a development/technical perspective, resource availability was a major problem. There are not enough on-staff resources available, and there is no other regional source available for the skills needed."
  - Staff turnover was also a problem at ITD during the early parts of the project. The original analyst resigned and took his institutional knowledge with him, the original project manager resigned, and one of the original developers resigned during the course of this project.
  - Additionally, without any resource redundancy on staff, the ramp-up period for replacement staff takes a long time.

- "Using contractor developers requires us to monitor them closely to make sure they perform the work properly and in a timely manner. This requires that we provide small tasks initially that are well designed and documented, and require the inclusion of unit test cases to insure that modules perform to the specifications. This requires on our part the time and effort up front to design the work assignments so they can be easily monitored. I would also be inclined to try to make the contractors work using fixed price rather than hourly contracts. They should be able to provide us with a cost estimate for coding a given module, provided our requirements and specifications, and then perform the work to their bid."

- During the entire lifespan of a project, continually take pause to evaluate the communication paths and brainstorm as to if all the right people are involved.
  - Development managers were not brought into the project fold early enough in the project
  - Although communication was strong between certain groups in the project, gaps in communication existed between those groups. Communication must remain comprehensive throughout.

- "… [of the] various challenges [of this product conversion and implementation], the biggest issue was the erosion of the premise of the project as the North Carolina code base was continually discovered to be more fundamentally flawed – discovered to the point where the team had to accept the fact that there

was no way it could continue to be salvaged and that the work needed to stop."

Success Story

- The Sec. of State Office very efficiently and effectively reorganized agency workflow personnel to accommodate the pending changes to their organization that were expected to be realized from this product. Although the product was never launched, the upside is that the agency is in a prime position to seek out an alternate option to successfully pick up where this project ended. Additionally, the staff is now thoroughly cognizant of what their office needs to achieve to be successful in their next endeavor.

- The project produced essential research and other output that will be reusable for an alternate solution:

    - Business documentation encapsulating the "as-is" state of high-level functions in the mainframe system
    - Data analysis and cleansing of data in existing systems
    - Online credit card transaction processing
    - A re-developed invoice/statement
    - Conversion of existing mo:dca images to .tif format (format typically used with more current systems). (N.B.: Documents/filings are stored as images in the system.)
    - Development of new forms for increased processing efficiency
    - Active directory list established for county recorder access to system
    - Analysis of architecture, security and infrastructure needs for a system

- "Although the application did not launch, I believe the technical staff that worked on the project truly worked some miracles with the code base they were given to start with (especially considering they came into the project mid-stream, replacing technical staff that had resigned from ITD). I know it will be hard for a lot of the non-technical staff to understand this, especially in light of not having a delivered product, but this was one of the most challenging situations I've experienced in my career for a developer (especially a development lead) to be in. Despite continued mounting issues being discovered with the code base, the tech team kept their head up and moved ahead, trying to achieve the goals of the project. Unfortunately, the main goal – a delivered, converted code base – was impossible to achieve without thoroughly drawing down the budget."

- "I thought that our [the ITD team's] working relationship with the Secretary of State staff was excellent. We were able to discuss any issue with them and they did not have any problem letting us know when something was wrong."

- "Project Management. As long as I am in my position I will continue to advocate for a good ND project manager to be utilized for all significant technology advancements."